

SALT LAKE CITY, UTAH

December 26, 1936

Hon. T. H. Humpherys
State Engineer
State Capitol Building
Salt Lake City, Utah

Dear Sir:

Attached is the Annual Report of the Water Commissioner for the Lower Bear River, for the irrigating season of 1936.

My active work as Commissioner started June 1, 1936, and ended October 31, 1936, but data covering all diversions for irrigation in this jurisdiction for the entire year are available and are included in this report.

It was my desire to summarize briefly the use of water from Bear River by Idaho irrigators, but unfortunately the Annual Report of the Idaho Commissioner is not yet at hand. However, important and interesting data regarding the Input and Draw-down from Bear Lake storage is available and is herein included.

Respectfully,

COLLINS T CANNON

WATER COMMISSIONER FOR
THE LOWER BEAR RIVER.

CTC/ic

Late in the year 1935, and early in the year 1936, owing to the complete withdrawal of available water from Bear Lake storage and the probably small amount of natural flow water that would be available from Bear River for irrigation during 1936, a warning was issued in your Commissioner's Report, in the press and in water users' meetings that a serious water shortage was impending for the year 1936.

Plans were made to recommend strongly the heavy planting of early maturing crops and the light planting of root and other late maturing crops, whose water requirements are high and constant throughout the entire irrigation season. These recommendations were found unnecessary for much later than usual and in quantities greater than normal, snow fell on the entire Bear River watershed and in the course of a very few weeks, the entire irrigation picture was changed. By April 1, there was assurance that a heavy spring runoff on the Upper Bear River would build up Bear Lake storage amounting to five feet in elevation, or 300,000 acre feet, and assurance of a large and prolonged natural flow in the Lower Bear River which would greatly reduce the withdrawal from storage during the irrigation season. These early estimates of Bear Lake storage were indeed conservative, the actual build-up of that storage amounted to 6.8 feet in elevation, or 415,000 acre feet, bringing the lake from an all time low elevation of 5902.0, to an elevation of 5908.6, and later, draw-down from storage amounting to 1.4 feet in elevation or 88,300 acre feet, both these figures, namely that of build-up and draw-down, being the greatest and least respectively in many recent years.

Below is a tabulation by years of the effect of storage in Bear Lake and draw-down for irrigation. These figures include natural inflow into Bear Lake and losses by evaporation.

YEAR	INPUT		DRAWDOWN	
	FT. IN ELEV.	AC. FT.	FT. IN ELEV.	AC. FT.
1926	1.3	87,900	7.3	480,000
1927	3.4	220,000	2.7	175,000
1928	5.1	334,000	4.5	296,000
1929	4.8	315,700	2.2	146,600
1930	2.3	153,400	3.2	212,300
1931	.8	52,400	5.5	352,900
1932	4.5	287,400	1.5	97,000
1933	2.7	175,700	3.6	233,300
1934	.7	44,800	5.9	367,500
1935	1.6	97,200	3.7	222,200
1936	6.8	415,800	1.4	88,300

Regardless of the very gratifying replenishment of Bear Lake storage and the rather large natural flow of Bear River entailed by heavy watershed precipitation, water users were cautioned to use the stored water as sparingly as possible, consistent with good irrigation practices, with the object eventually of restoring Bear Lake to a high level and preventing a recurrence of the scarcity of the years 1934 and 1935.

Towards the end of June, owing to almost extreme drouth conditions, and the resulting heavy demand for water for crops, it became evident that pumping operations on Bear Lake, to supplement the rapidly diminishing natural flow of Bear River, would have to be resorted to 15 days sooner than was anticipated earlier in the season. Accordingly, it was deemed advisable by your Commissioner, commencing July 1, to allot definite amounts of water as maxima for irrigators. These allotments were generous as compared to the years 1934

and 1935, but were somewhat less than the amounts of water these irrigators had been accustomed to at any previous time. They were adequate and no complaints, whatsoever, were heard.

The following tabulation reveals that the acre foot per acre use of water by the principal systems along the Lower Bear River for the irrigating season of this year was the least of any normal year of the last 10 years and even reasonably comparable to the diversions of the years 1934 and 1935, when acute shortage was imminent.

COMPARATIVE TABLE SHOWING THE USE OF WATER IN AC.FT. FOR IRRIGATION FROM THE LOWER BEAR RIVER PERIOD 1927 to 1936 INCL.

	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTALS AC.FT. PER AC.
1927							
LEWISTON-BEAR LAKE		3650	4650	2300		10600	.75
SMALL PUMPS						*7500	*1.61
UTAH-IDAHO SUGAR CO	26720	40960	47690	42220	43730	15760	217350 4.18
1928							
LEWISTON-BEAR LAKE		4650	4650	2850		12150	.85
SMALL PUMPS						*7500	*1.61
UTAH-IDAHO SUGAR CO	34970	38390	45230	45090	36640	18630	218950 4.21
1929							
LEWISTON-BEAR LAKE		3650	4650	3000		11300	.80
SMALL PUMPS						*7500	*1.61
UTAH-IDAHO SUGAR CO	21770	36500	46020	42390	26590	17510	190780 3.67
1930							
LEWISTON-BEAR LAKE		3000	4650	4650	1800	14100	.99
SMALL PUMPS						*7500	
UTAH-IDAHO SUGAR CO	23880	47670	47200	34910	33650	10960	198270 3.81
1931							
LEWISTON-BEAR LAKE		4350	4650	4650	2400	16050	1.13
SMALL PUMPS						*7500	*1.61
UTAH-IDAHO SUGAR CO	28720	45630	46080	43510	35320	17580	216840 4.17
1932							
LEWISTON-BEAR LAKE		4650	4650	2400		11700	.82
SMALL PUMPS						*7500	1.61
UTAH-IDAHO SUGAR CO	18140	38260	47500	45720	36490	24010	210120 4.04
1933							
LEWISTON-BEAR LAKE		600	4650	4650	3750	13650	.96
SMALL PUMPS						*7500	1.61
UTAH-IDAHO SUGAR CO.	6730	46840	45900	50000	40320	27820	217610 4.18
1934							
LEWISTON-BEAR LAKE	3235	4447	4612	4612	2489	19395	1.36
SMALL PUMPS	1092	1320	1254	1496	824	5986	1.28
UTAH-IDAHO SUGAR CO	39200	31880	31870	32030	20980	8560	164520 3.16

	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTALS	AC.FT. PER AC
	1935							
LEWISTON-BEAR LAKE		4413	4510	1916			10839	.76
SMALL PUMPS	136	1373	2181	1431	613	71	5805	1.25
UTAH-IDAHO SUGAR CO	20000	40700	39600	34200	23100	13500	171100	3.29
	1936							
LEWISTON-BEAR LAKE		215	4100	3600	1900		9815	.69
SMALL PUMPS	386	1363	1504	1227	912	57	5449	1.17
UTAH-IDAHO SUGAR CO	34870	36860	38700	37660	32510	16500	197100	3.79

*estimated

Certain regretable wastes of irrigation water occurred in the Box Elder County area owing to flash storms. This caused the nonwithdrawal, during the storms, of water already in the canals. Perforce, this water was wasted into Great Salt Lake. No accurate means of determining the amounts of these wastes were available, however, it is your Commissioner's opinion that they did not exceed 5,000 acre feet.

It is gratifying to report that all irrigators along the Lower Bear River have shown a strong desire to co-operate with the Commissioner in his efforts to confine the use of water to amounts dictated by sound irrigation practices. It is realized that the following of such practices will result in the restoration of Bear Lake to a level representing a high amount of reserve.

Your Commissioner strongly recommends that the policy of sensible and conservative use of water be continued, that the heavy irrigation of lands as a means of soil changing be encouraged during periods of high natural flow of Bear River and that allotments limited strictly to needs be made during periods of pumping of Bear Lake. It is felt that a continuance of such policy will cause the restoration of Bear Lake to a point of high reserve and the recurrence of critical shortages of 1934 and 1935 can be forever averted.

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Daily Discharge in Second Feet of ~~the~~ WEST SIDE CINALat WHEELON, UTAH for YEAR 1936

Day	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	16	16	16	11		488	591	482	523	355	135	100
2	16	16	16	11		563	568	480	523	345	114	100
3	16	16	16	11		528	574	478	527	334	100	90
4	16	16	16	11	63	401	574	464	520	312	100	40
5	16	16	16	11	175	305	574	443	514	290	100	40
6	16	16	16	11	200	305	574	434	514	287	100	40
7	16	16	16	11	235	305	574	453	502	303	100	40
8	16	16	16	11	250	305	574	473	488	290	100	40
9	16	16	16	11	300	304	574	491	488	277	100	40
10	16	16	16	11	300	305	574	504	485	269	100	40
11	16	16	16	11	377	344	552	504	483	265	100	40
12	16	16	16	11	450	400	476	504	466	255	100	37
13	16	16	16	11	408	450	448	504	461	246	100	37
14	16	16	16	4	540	519	460	491	458	239	100	37
15	16	16	16		598	569	448	494	450	237	100	37
16	16	16	16		598	600	446	489	442	223	100	37
17	16	16	16		615	600	448	485	432	204	100	37
18	16	16	16		625	600	450	485	419	190	100	37
19	16	16	16		622	605	461	485	410	190	100	37
20	16	16	16		631	613	472	483	411	187	100	37
21	16	16	16		640	613	473	504	410	172	100	37
22	16	16	16		640	622	488	504	408	160	100	37
23	16	16	16		642	630	498	504	408	159	100	37
24	16	16	11		644	630	504	506	408	159	100	37
25	16	16	11		648	625	491	506	413	159	100	37
26	16	16	11		644	637	477	506	404	159	100	37
27	16	16	11		639	637	469	506	395	159	100	37
28	16	16	11		641	636	456	506	380	154	100	37
29	16	16	11		639	625	456	510	365	148	100	37
30	16	11			641	619	456	520	365	146	100	37
31	16	11			614		480	523		146		37
Mean												
Sec.ft.16	16	15	5	467	513	505	491	449	226	102	44	
Total												
Ac.ft.980	920	900	290	27800	30500	31000	30200	26700	13900	6050	2680	

TOTAL FOR YEAR 1936 171820 ACRE FEET

PLATE 111

Daily Discharge in Second Feet of HAMMOND (EAST SIDE) CANALat WHEELON, UTAH for YEAR 1936

Day	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1					50	102	127	115	124	81	20	
2					50	102	125	119	124	85	17	
3					68	100	129	124	124	83	15	
4					75	78	125	125	121	70	6	
5					75	47	125	132	110	64		
6					75	46	125	118	102	66		
7					75	46	125	115	100	68		
8					75	44	125	115	100	48		
9					75	46	125	115	103	42		
10					75	48	125	115	107	47		
11					89	49	125	115	107	42		
12					108	56	125	115	107	41		
13					130	88	126*	115	107	41		
14					127	105	126	124	101	41		
15					138	122	127	124	96	40		
16					145	130	127	123	96	40		
17					151	130	126	123	95	40		
18					150	124	126	123	85	41		
19					146	137	125	123	83	41		
20					145	144	125	124	84	35		
21					146	144	125	124	85	25		
22					145	149	125	124	85	24		
23					145	151	125	124	85	23		
24					145	151	125	124	85	23		
25					145	152	126	124	88	23		
26					145	154	126	124	90	23		
27					140	154	126	124	87	23		
28					135	144	126	125	84	22		
29					135	130	126	124	82	22		
30				33	136	131	124	124	81	22		
31					127		119	124		22		
Mean												
Sec.ft.00	00	00	1		115	107	125	121	98	42	2	
Total												
Ac.ft.00	00	00	65	7070	6360	7700	7460	5810	2600	100	00	
				TOTAL FOR YEAR 1936		37165			ACRE FEET			

PLATE 1V

Daily Discharge in Second Feet of COMBINED WEST SIDE AND EAST SIDE CANALSAt WHEELON, UTAH for YEAR 1936

Day	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG'	SEPT	OCT	NOV	DEC
1	16	16	16	11	50	590	718	597	647	436	155	100
2	16	16	16	11	50	665	693	599	647	430	131	100
3	16	16	16	11	68	628	703	602	651	417	115	90
4	16	16	16	11	138	479	699	589	641	382	106	40
5	16	16	16	11	250	352	699	575	624	354	100	40
6	16	16	16	11	275	351	699	552	616	357	100	40
7	16	16	16	11	310	351	699	568	602	371	100	40
8	16	16	16	11	325	349	699	588	588	338	100	40
9	16	16	16	11	375	350	699	606	591	319	100	40
10	16	16	16	11	375	353	699	619	592	316	100	40
11	16	16	18	11	466	393	677	619	590	307	100	40
12	16	16	16	11	558	456	601	619	573	296	100	37
13	16	16	16	11	538	438	574	619	568	287	100	37
14	16	16	16	4	667	624	586	615	559	280	100	37
15	16	16	16		736	691	575	618	546	277	100	37
16	16	16	16		743	730	573	612	538	263	100	37
17	16	16	16		766	730	574	608	527	244	100	37
18	16	16	16		775	724	576	608	504	231	100	37
19	16	16	16		768	742	586	608	493	231	100	37
20	16	16	16		776	757	597	607	495	222	100	37
21	16	16	16		786	757	598	628	495	197	100	37
22	16	16	16		785	771	613	628	493	184	100	37
23	16	16	16		787	781	623	628	493	182	100	37
24	16	16	11		789	781	629	630	493	182	100	37
25	16	16	11		793	777	617	630	501	182	100	37
26	16	16	11		789	791	603	630	494	182	100	37
27	16	16	11		779	791	595	630	482	182	100	37
28	16	16	11		776	780	582	631	464	176	100	37
29	16	16	11		774	755	582	634	447	170	100	37
30	16	11	33		777	750	580	644	446	168	100	37
31	16	11			741		599	647		169		37
Mean												
Sec.ft16	16	15	6	567	616	630	612	547	268	104	44	
Total												
Ac.ft.980	920	900	355	34870	36860	38700	37660	32510	16500	6150	2680	

TOTAL FOR YEAR 1936 209085 ACRE FEET

PLATE V

Daily Discharge in Second Feet of BEAR RIVERat WESTON, IDAHO for MAY TO SEPTEMBER, incl. 1936

Day	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	S PT	OCT	NOV	DEC
1					1975	550	280	405	375			
2					1875	625	270	380	340			
3					1900	745	280	370	375			
4					1900	690	240	380	270			
5					2000	725	225	385	395			
6					2140	690	260	275	370			
7					1770	665	500	320	255			
8					1800	650	475	340	250			
9					1950	650	455	310	270			
10					1820	645	440	220	430			
11					1680	670	500	270	375			
12					1610	425	400	325	370			
13					1640	350	350	325	355			
14					1500	405	400	300	355			
15					1520	415	735	260	325			
16					1590	635	565	215	350			
17					1550	545	505	275	325			
18					1540	325	400	355	390			
19					1530	225	375	310	395			
20					1580	205	375	315	350			
21					1440	185	485	390	390			
22					1280	190	470	325	300			
23					1120	330	485	310	445			
24					1050	175	540	290	325			
25					1050	125	450	325	210			
26					985	235	460	305	380			
27					735	280	515	365	355			
28					945	635	475	310	395			
29					790	690	415	285	225			
30					545	300	540	325	240			
31					535		440	340				
Mean Sec.ft.					1463	466	429	320	341			
Total Ac.ft.					89900	27700	26400	19700	20250			

TOTAL FOR MAY TO SEPT. incl. 183950 ACRE FEET

PLATE VI

Daily Discharge in Second Feet of BEAR RIVER

at COLLINSTON, UTAH for YEAR 1936

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	UG	SEPT	OCT	NOV	DEC
1	553	637	997	1666	4995	2326	29	29	22	397	1655	1064
2	656	480	1883	1989	4840	2013	29	29	22	390	846	929
3	547	944	1797	2213	4636	2042	29	29	22	137	1132	774
4	932	1242	1419	1751	4415	3196	29	29	22	81	700	1075
5	520	1150	1536	979	3820	2370	29	29	22	157	1014	75
6	1076	798	1477	1460	4228	2377	29	26	22	154	1561	10
7	860	701	1053	848	4861	2581	29	22	22	535	1180	25
8	457	753	1971	1946	5160	2184	29	22	22	515	1459	974
9	525	515	1519	1952	4556	2136	29	22	22	250	1439	715
10	687	567	1110	1784	4299	2478	29	22	22	455	1059	955
11	1057	874	1120	1773	4070	2190	29	22	22	845	1032	969
12	1049	1251	1655	937	4165	2187	29	22	22	386	1209	869
13	1121	985	2054	2288	4044	1633	29	22	22	1258	1924	1434
14	1314	1049	1670	2685	4146	951	29	22	22	834	975	1172
15	1101	905	1312	2508	3920	1793	29	22	22	19	571	1193
16	1195	1532	1461	2784	4021	629	29	22	22	670	249	1147
17	1766	1234	1114	2735	4133	1312	29	22	22	625	190	1146
18	1295	1113	874	2692	4065	1187	29	22	22	1030	908	922
19	707	1206	657	3031	4668	496	29	22	22	1159	571	668
20	834	1207	902	3059	3571	1691	29	22	22	930	491	1155
21	829	1056	1392	3539	3386	418	29	22	22	1118	999	785
22	457	1132	1553	3266	3300	30	29	22	22	1070	1466	*900
23	514	2446	1958	5753	3100	29	29	22	22	1075	1641	*900
24	651	2587	1763	6395	2873	29	29	22	22	908	1005	*900
25	927	1732	1629	6530	2839	29	29	22	22	1247	758	*900
26	606	1762	1389	6654	2614	29	29	22	22	384	970	*900
27	12781	1385	853	6533	2186	29	29	22	128	586	1124	*900
28	885	1333	967	6150	2151	29	29	22	855	1171	903	*900
29	710	1361	692	5872	1926	29	29	22	613	1399	1696	*900
30	871			810	5500	43	29	29	22	1388		*900
31	710			669	1576		29	22				
Mean Sec.ft.	861	1172	1330	3235	3623	1248	29	23	101	705	1090	881
Total Ac. ft.	53000	67400	81800	192300	223000	74200	1780	1470	6020	43300	64900	54200

TOTAL FOR YEAR 1936 863370 CRE FEET
*estimated

PLATE VII

COMPUTATION OF INCREASE IN NATURAL FLOW OF
BEAR RIVER BETWEEN WESTON, IDAHO AND CUTLER DAM
(CACHE VALLEY CONTRIBUTION)

1936

<u>DIVERSIONS</u>	MAY	JUNE	JULY	AUG	SEPT
LEWISTON-BEAR LAKE IRRIG. CO.	0	4	67	58	31
SMALL CACHE VALLEY PUMPS	6	23	24	20	15
WEST CACHE IRRIG. CO. PUMP		5	6		
CUTLER RESERVOIR INCREASE	141		138		81
EAST AND WEST CANALS	567	616	630	612	547
BEAR RIVER NEAR COLLINSTON	<u>3623</u>	<u>1248</u>	<u>29</u>	<u>23</u>	<u>101</u>
TOTAL DIVERSIONS	4337	1896	894	713	775

INPUT TO RIVER

BEAR RIVER AT WESTON	1463	466	429	330	341
CUTLER RESERVOIR DRAWDOWN	—	<u>186</u>	—	<u>16</u>	—
TOTAL INPUTS	1463	652	429	336	341
TOTAL DIVERSIONS	<u>4337</u>	<u>1896</u>	<u>894</u>	<u>713</u>	<u>775</u>
INCREASE SEC. FT.	2874	1244	465	377	434
INCREASE AC. FT.	176800	74000	28600	23200	25800

PLATE VIII

RECORD OF ELEVATIONS OF BEAR LAKE
ON FIRST DAY OF EACH MONTH

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1921	17.9	17.8	18.0	19.5	20.7	23.0	23.6	23.5	23.0	22.6	22.4	22.1
1922	22.0	21.6	21.6	21.5	22.1	23.2	23.6	23.2	22.8	22.4	22.0	21.8
1923	21.4	21.0	20.7	20.5	22.1	23.6	23.7	23.3	22.3	21.7	21.9	21.8
1924	21.1	20.3	20.1	20.4	22.2	22.8	22.1	21.0	19.5	18.3	17.8	17.1
1925	16.7	16.5	16.5	17.3	18.1	18.7	18.7	18.2	17.1	16.6	16.0	15.6
1926	15.3	14.9	15.0	15.7	16.2	16.0	15.1	14.1	12.9	11.6	10.8	10.1
1927	9.3	8.9	9.0	9.5	10.5	11.8	12.3	11.4	10.2	9.8	9.6	9.8
1928	9.9	10.0	10.2	11.3	12.1	14.0	14.7	13.8	12.5	11.3	11.2	10.2
1929	10.6	10.6	10.7	11.4	12.8	14.2	15.0	14.3	13.6	13.4	13.1	12.8
1930	12.9	12.9	13.2	13.9	14.9	15.1	14.6	13.4	12.9	12.4	12.3	12.0
1931	11.9	11.9	12.0	12.4	12.7	12.4	11.4	09.8	08.5	07.5	07.4	07.2
1932	07.3	07.6	07.8	08.3	09.4	10.5	11.7	11.7	10.8	10.3	10.1	10.2
1933	10.2	10.4	10.7	11.1	11.8	12.5	12.9	11.9	10.6	09.6	09.4	09.3
1934	09.4	09.5	09.7	10.0	09.9	08.9	07.8	06.6	05.3	04.2	04.1	04.1
1935	04.1	04.1	04.4	04.7	05.2	05.3	05.7	04.3	03.2	02.4	02.1	02.0
1936	02.1	02.2	02.8	03.2	05.3	07.6	08.8	08.3	08.0	07.4	07.4	07.6

Note:-Add 5900 to each elevation listed to obtain the true elevation on the River Datum.